

## DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

### RCRA Corrective Action Environmental Indicator (EI) RCRIS code (CA750) Migration of Contaminated Groundwater Under Control

Facility Name: The Ensign-Bickford Company  
Facility Address: 8305 South Highway 6, Spanish Fork, Utah 84660-0310  
Facility EPA ID #: UTD041310962

1. Has **all** available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

☒ **X** If yes - check here and continue with #2 below.

☐ If no - re-evaluate existing data, or

☐ if data are not available, skip to #8 and enter "IN" (more information needed) status code.

### **BACKGROUND**

#### **Definition of Environmental Indicators (for the RCRA Corrective Action)**

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

#### **Definition of "Migration of Contaminated Groundwater Under Control" EI**

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

#### **Relationship of EI to Final Remedies**

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Migration of Contaminated Groundwater Under Control" EI pertains **ONLY** to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

#### **Duration / Applicability of EI Determinations**

EI Determinations status codes should remain in RCRIS national database **ONLY** as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

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2. Is **groundwater** known or reasonably suspected to be **"contaminated"**<sup>1</sup> above appropriately protective "level" (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

- ☒ If yes - continue after identifying key contaminants, citing appropriate "levels," and referencing supporting documentation.
- ☐ If no - skip to #8 and enter "YE" status code, after citing appropriate "levels," and referencing supporting documentation to demonstrate that groundwater is not "contaminated."
- ☐ If unknown - skip to #8 and enter "IN" status code.

Footnotes:

<sup>1</sup> "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate "level" (appropriate for the protection of the groundwater resource and its beneficial uses).

**Rationale and Reference(s):**

The groundwater was first known to have been contaminated with elevated nitrate in 1986 when the facility waste acid surface impoundment failed releasing spent nitric acid into the subsurface. Constituents of energetic materials (CEMs), such as RDX, PETN, TNT, etc. were detected in municipal, private and monitoring wells in 1994 using an EPA analytical method that was able to achieve a lower detection limit. Preliminary RCRA Facility Investigation (RFI) data indicate the former unlined waste water impoundments and acid ponds may be the primary sources to the groundwater contamination that is approximately three miles long and one mile wide (see the attached Nitrate-Nitrogen and RDX Approximate Distribution Map 2000). EBCO no-longer discharges production related waste water on to the surface soil or into ponds. Since 1991, all waste waters have been treated in the facility waste water treatment system before discharging to a POTW.

EBCO has performed various phases of hydrogeologic investigations in the area of impact in accordance with the provisions of the consent agreement between the Utah Division of Water Quality (DWQ) and EBCO under the framework of the Clean Water Act. The area of study approximately encompasses a region of five miles long and two miles wide as depicted in Figure 6.3 Study Area Topography (the figure number is as presented in the CAP and are presented in numerical order).

EBCO has installed a pump-and-treat system composed of three granular active carbon (GAC) with a total of five extraction wells to treat and contain the groundwater plume. The combined total groundwater extraction rate is approximately 2200 to 2500 gpm. Treated groundwater is discharged to the Hobble Creek, and is also used as secondary irrigation water for residents' lawns during the summer months.

The RDX concentrations within the area of impact range from approximately 2 to 30 µg/L (ppb). The Federal Drinking Water Health Advisory (FDWHA) for RDX is 2 ppb.

Table 1 identifies maximum levels of constituents that may be attributable to historic production activities at the EBCO site and that have been identified in the regional groundwater aquifer:

**Table 1: Maximum Levels of Constituents detected in the Regional Aquifer**

Constituent	M.C.L.	R317-6-2	Proposed CACL <sup>1</sup>	Maximum Detected (2000) <sup>2</sup>	Location	Well Type
Nitrate-nitrogen	10 mg/L	10 mg/L	10 mg/L	21.0 mg/L	Young	Off-site private well
Sulfate <sup>3</sup>	-	-	-	180 mg/L	MW-5S	Off-site monitor well
Lead (total)	0.015 mg/L	-	-	0.0827 mg/L <sup>4</sup>	MW-17D <sup>4</sup>	On-site monitor well
Lead (diss.)	-	0.015 mg/L	0.015 mg/L	0.07 mg/L <sup>5</sup>	MW-11D <sup>5</sup>	On-site monitor well
Acetone <sup>6</sup>	-	-	-	29 J <sup>6</sup>	MW-16D <sup>6</sup>	On-site monitor well
RDX	-	-	17 ug/L	48.4 ug/L	MW-1S	Off-site monitor well
HMX	-	-	400 ug/L	5.27 ug/L	MW-6D	Off-site monitor well
2,4,6-TNT <sup>7</sup>	-	-	8 ug/L	2.16 ug/L <sup>7</sup>	FW-1 <sup>7</sup>	On-site private well
2,4-DNT <sup>8</sup>	-	-	32 ug/L	<0.16 ug/L	-	-
2,6-DNT <sup>9</sup>	-	-	0.2 ug/L	0.47 ug/L <sup>9</sup>	R-1 <sup>9</sup>	On-site recovery well
NG	-	-	52 ug/L	<0.10 ug/L	-	-
EGDN	-	-	52 ug/L	10.1 ug/L	MW-10D	Off-site monitor well
DEGDN	-	-	52 ug/L	4.18 ug/L	MW-11D	On-site monitor well
TEGDN	-	-	52 ug/L	2.65 ug/L	Frischknecht	Off-site private well
TMETN	-	-	52 ug/L	7.90 ug/L	Whiting	Off-site private well
BTTN	-	-	52 ug/L	3.38 ug/L	Orton-23	Off-site private well
PETN	-	-	52 ug/L	2.47 ug/L	UP&L	Off-site private well
TSNE <sup>10</sup>	-	-	52 ug/L	18.73 ug/L	Young	Off-site private well

Notes: Shaded cells indicate that Maximum detected concentration exceeds proposed CACL.

"J" indicates that the reported analyte concentration is an estimated value.

<sup>1</sup>Proposed CACLs are presented in the Corrective Action Plan (Charter Oak, 2002) that have not been approved and are currently under review.

<sup>2</sup>Unless specified otherwise, the maximum concentration detected during calendar year 2000 is presented.

<sup>3</sup>No MCLs or ground water protection standards are established for sulfate. The secondary drinking water standard for sulfate is 250 mg/L. Sulfate is included as it may be attributable to historic manufacturing operations at the site. High sulfate concentrations are also reported in the Spanish Fork River which recharges the regional aquifer system in the study area.

<sup>4</sup>Based on preliminary data from on-site RFI monitoring wells. Dissolved lead was not detected in this sample.

<sup>5</sup>Sample collected in October 1998. Neither total nor dissolved lead were detected (MDL = 0.005 mg/L) in subsequent sampling of R-1, MW-1S, MW-1D, MW-2S, MW-6D, MW-7D, MW-12 and B-9 (Charter Oak, 1998c).

<sup>6</sup>Based on preliminary data from recently installed RFI monitoring wells.

<sup>7</sup>Since 1995, TNT has been detected a total of four times in two different wells that are open to the regional aquifer. The highest reported concentration was reported in FW-1 in October 1998.

<sup>8</sup>The compound 2,4-DNT was added to the ground water monitoring parameter list in the first quarter of 2001. The compound 2,4-DNT has not been detected in the regional aquifer during two rounds of sampling.

<sup>9</sup>Since 1995, the compound 2,6-DNT has been detected a total of four times at four different locations. This value represents the highest concentration reported (August 2000). The compound 2,6-DNT has not been detected in the regional aquifer during two rounds of sampling in 2001.

<sup>10</sup>TSNE (Total Specialty Nitrate Esters) represents the combined concentrations of NG, EGDN, DEGDN, TEGDN, TMETN, BTTN and PETN.

Table 2 identifies maximum levels of constituents that may be attributable to historic production activities at the EBCO site and that have been detected in perched ground water. Perched ground water identified in the northeast corner of the EBCO site lies above, and is not part of, the regional aquifer. Based on available preliminary data, the perched ground water is of limited lateral and vertical extent and is contained within relatively low permeability deposits. This zone of perched ground water does not have any beneficial use and does not meet the definition of an “aquifer” as defined by the Utah Administrative Rules for Ground Water Quality Protection (R317-6). Section R317-6-1 of Utah Administrative Code defines an aquifer as follows:

“Aquifer” means a geologic formation, group of geologic formations or part of a geologic formation that contains sufficiently saturated permeable material to yield usable quantities of water to wells and springs.

Nevertheless, information concerning the perched ground water is provided to assist the reviewer.

Preliminary water quality data from the perched ground water are available from recently completed monitoring wells that are open to perched ground water underlying the northeast corner of the EBCO site in the general area of SWMU’s 1, 16, 18, 30, 31 and 42. This zone of perched ground water is approximately 80 to 100 feet below the ground surface and is approximately 100 feet above the top of the zone of saturation of the regional unconsolidated aquifer.

*Table 2: Maximum Levels of Constituents detected in On-site Perched Ground Water (Preliminary Data)*

<i>Constituent</i>	<i>Maximum Detected<sup>1</sup></i>	<i>Location</i>
Nitrate-nitrogen	1480 mg/L	MW-23S
Sulfate	1200 mg/L	MW-23S
Lead (total)	0.0487 mg/L <sup>2</sup>	MW-16S
Lead (dissolved)	0.0025 mg/L	MW-22S
Benzene	0.0006 mg/L	MW-21S
Dibromochloro-methane (THM)	0.0005 mg/L T <sup>3</sup>	MW-16S
Methylene Chloride	0.001 mg/L T <sup>3</sup>	MW-16S
Toluene	0.0003 mg/L T <sup>3</sup>	
RDX	728 ug/L	MW-16S <sup>4</sup>
HMX	73.6 ug/L	MW-16S <sup>4</sup>
2,4,6-TNT	<0.16 ug/L	-
2,4-DNT	<0.24 ug/L	-
2,6-DNT	1.45 ug/L	MW-22S
NG	368 ug/L	MW-16S <sup>4</sup>
EGDN	5230 ug/L	MW-19S
DEGDN	20500 ug/L	MW-22S
TEGDN	3760 ug/L	MW-22S
TMETN	122 ug/L	MW-22S
BTTN	15.6 ug/L	MW-16S <sup>4</sup>
PETN	61.7 ug/L	MW-16S <sup>4</sup>
TSNE <sup>5</sup>	28362.5 ug/L	MW-22S

“T” indicates that the analyte concentration is less than the PQL but greater than the MDL and should be considered estimated.

The proposed CACLs identified in Table 1 apply to the regional aquifer only and are not intended for application to perched ground water as the perched ground water is not considered to have any beneficial use.

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3. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater"<sup>2</sup> as defined by the monitoring locations designated at the time of this determination)?

☒ If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination"<sup>2</sup>.

☐ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination"<sup>2</sup>) - skip to #8 and enter "NO" status code, after providing an explanation.

☐ If unknown - skip to #8 and enter "IN" status code.

<sup>2</sup> "existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

**Rationale and Reference(s):**

The **Corrective Action Plan** (Charter Oak, 2002) provides a detailed review of hydrogeologic and ground water quality data available for the project area. These data are used to characterize the hydrogeology of the study area, the distribution of solutes and the trends in ground water chemical data. The Corrective Action Plan, currently out for public comment, also presents a review of environmental fate and transport mechanisms that may affect the behavior of the constituents of concern. The Corrective Action Plan also describes a corrective action that includes a combination of pump-and-treat remediation and natural attenuation to address constituents present in the regional aquifer. The summary information provided below to support the ground water migration stabilization assessment is presented in the Corrective Action Plan.

Based on the information contained in the Corrective Action Plan and ground water monitoring data collected over the past ten years, the migration of impacted ground water appears stabilized. No CEMs have been detected beyond the size of the established groundwater plume. The migration of contaminated groundwater is under control due to the combination of nature attenuation processes and the pump-and-treat system. The supporting information for this groundwater determination is presented in more detail in the proposed Corrective Action Plan, which includes information about the conceptual model of ground water flow, water level elevations, solute distribution, Chemicals of Concerns (COC) concentration trends, zones of capture, corrective action activities and natural attenuation.

It should be mentioned that, because the hydrogeologic settings are extremely heterogeneous and complex in the general area of study, the area hydrogeologic conditions, such as groundwater flow directions, the properties of the area geologic faults, etc., are not still well understood after more than ten years of extensive hydrogeologic investigations and assessments. For example, because of the heterogeneous nature of the regional aquifer and the variable well completion depths, it is not appropriate to estimate the direction of ground water movement by showing flow lines perpendicular to the ground water level elevation contours. There are several aquifer systems present in the study area: the bedrock aquifer; the regional unconsolidated aquifer; the perched Mapleton Bench ground water system; and localized areas of perched ground water, above the regional unconsolidated aquifer system. The regional

hydrogeological information can be found in the Hydrology and simulation of ground water flow in the southern Utah and Goshen Valleys, Utah: United States Geological Survey in cooperation with the Utah Department of Natural Resources Division of Water Rights, Utah DNR Technical Publication No. 111 (1995) and the Corrective Action Plan (2001).

### References

- Corrective Action Plan (Charter Oak Environmental Services, Inc.), 2002, The Ensign-Bickford Company, Spanish Fork, Utah.
- Hydrology and simulation of ground water flow in the southern Utah and Goshen Valleys, Utah (Brooks, L.E. and B.J. Stolp), 1995, United States Geological Survey in cooperation with the Utah Department of Natural Resources Division of Water Rights, Utah DNR Technical Publication No. 111.
- The Geology of North America (Mifflin, M.D.), 1988, Vol. O-2, Hydrogeology, Chapter 8, Region 5, Great Basin: The Geological Society of America.
- Final Revised, Volume II, Field Sampling Program, RCRA Facility Investigation at The Ensign-Bickford Company Facility in Spanish Fork, Utah (Montgomery Watson), 1998
- Quarterly Reports and Annual Reports for recovery system performance, general water quality, and potentiometric data (Charter Oak Environmental).
- Well Head Protection Plan, 1998 (Charter Oak Environmental).  
R-1, R-2 and Orton-23 Well Construction and Pump Test Reports, 1998 (Charter Oak Environmental).
- Nitrate and RDX Distribution and Fate Report (Charter Oak Environmental).
- Data Collection Plan, 1998 (Charter Oak Environmental).
- An Evaluation of Wastewater Management Alternatives, 1997 (Consulting Environmental Engineerings).
- R-3 Well Construction and Pump Test, 1997 (Owens Western Company).
- Supplemental Hydrogeologic Investigation Report, 1996 (Owens Western Company).
- Phases Ia, Ib, II, III and IV Hydrogeologic Investigation Reports, 1992-1995, and Hydrogeologic Investigation Plan 1991 (Owens Western Company).
- Hydrogeologic Assessment Program, 1989 and 1990 (Engineering Science).
- A Hydrogeologic Evaluation of the IMC Springville Plant Site, Utah, Phase I (1979); Preliminary Investigation of Waste Management at the IMC Springville Plant, Phase II (1980); A Hydrogeologic Evaluation of the IMC Springville Plant Site, Utah, Phase III (1981); and Hydrogeologic Evaluation of the IMC Springville Plant Site, Utah, Phase IV (1981) (PE LaMoreaux & Associates).

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4. Does "contaminated" groundwater **discharge** into **surface water** bodies?

\_\_\_\_\_ If yes - continue after identifying potentially affected surface water bodies.

  x   If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies.

\_\_\_\_\_ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

**Based upon the current understanding of the hydrogeologic system, impacted ground water present in on-site perched zones and the regional aquifer does not discharge to surface water bodies (Corrective Action Plan, Charter Oak, 2002).**

**The Spanish Fork River, which is located less than one half mile southwest of the EBCO site, is a losing stream in the area near the mouth of Spanish Fork Canyon and water from the Spanish Fork River recharges the regional aquifer system in this area. Therefore, ground water from the regional aquifer system cannot discharge to the Spanish Fork River. Based on preliminary RFI data, impacted perched ground water that is present in the northeast corner of the EBCO site flows in a northerly direction and would not discharge to the Spanish Fork River.**

**Hobble Creek is located approximately four miles north of the EBCO site. The stream channel of Hobble Creek is over 100 feet higher than the water table of the regional aquifer. Water quality data from wells located adjacent to Hobble Creek (Seal and Carneseca) indicate that CEMs are not present at these locations and nitrates are present at levels substantially below the ground water quality protection standard of 10 mg/L.**

**The Mapleton Lateral is an engineered irrigation feature that flows from south to north from the Spanish Fork River toward Hobble Creek. The Mapleton Lateral crosses the EBCO site from south to north and is concrete lined over a portion of the distance. The base of the Mapleton Lateral is approximately 85 feet higher than the top of the water table of the regional unconsolidated aquifer. Perched ground water on the site is found in the northeast portion of the property and preliminary water level elevation data suggest a northerly perched ground water flow direction (to the extent that there is any significant flow at all). All of the available data indicate that perched ground water does not discharge to the Mapleton Lateral.**

**The regional aquifer ultimately discharges to Utah Lake; however, Utah Lake is located approximately five miles beyond the known extent of ground water impacts.**

**The references are the same as the previously listed.**

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5. Is the **discharge** of "contaminated" groundwater into surface water likely to be "**insignificant**" (i.e., the maximum concentration<sup>3</sup> of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level," and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

\_\_\_\_\_ If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration<sup>3</sup> of key contaminants discharged above their groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) provide a statement of professional judgement/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

\_\_\_\_\_ If no - (the discharge of "contaminated" groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration<sup>3</sup> of each contaminant discharged above its groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations<sup>3</sup> greater than 100 times their appropriate groundwater "levels," the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

\_\_\_\_\_ If unknown - enter "IN" status code in #8.

Rationale and Reference(s): \_\_\_\_\_  
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<sup>3</sup> As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

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6. Can the **discharge** of “contaminated” groundwater into surface water be shown to be “**currently acceptable**” (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented<sup>4</sup>)?

\_\_\_\_\_ If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site’s surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR  
2) providing or referencing an interim-assessment,<sup>5</sup> appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment “levels,” as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

\_\_\_\_\_ If no - (the discharge of “contaminated” groundwater can not be shown to be “**currently acceptable**” - skip to #8 and enter “NO” status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

\_\_\_\_\_ If unknown - skip to 8 and enter “IN” status code.

Rationale and Reference(s): \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

<sup>4</sup> Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

<sup>5</sup> The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

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7. Will groundwater **monitoring** / measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the "existing area of contaminated groundwater?"
- ☒ **X** If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination."
- ☐ If no - enter "NO" status code in #8.
- ☐ If unknown - enter "IN" status code in #8.

Rationale and Reference(s):

The **Corrective Action Plan** (Charter Oak, 2002) presents a proposed monitoring plan for continued assessment of ground water quality and water level conditions in the regional aquifer. According to the proposed monitoring plan, water levels will be measured monthly from all monitoring wells and some private wells and also be measured weekly from all the extraction wells. A primarily quarterly monitoring program will be implemented for CEMs and nitrate-nitrogen analyses in the study area to confirm the determination that the migration of contaminated groundwater is under control. Chemical analyses will be conducted monthly for the extraction wells.

Three new monitoring wells that were proposed in the **Corrective Action Plan** (Charter Oak, 2002) have been installed. These monitoring wells are located to assess ground water quality conditions in the deeper intervals of the regional aquifer along the western margins of the affected area, and also aid in the assessment of ongoing ground water remediation activities which consist of a combination of active restoration (pump and treat) and natural attenuation.

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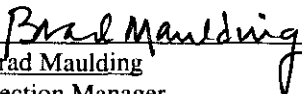
8. Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

  YE   YE - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at **The Ensign-Bickford Company** facility, EPA ID # **UTD041310962**, located at **8305 South Highway 6, Spanish Fork, Utah**. Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater." This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

       NO - Unacceptable migration of contaminated groundwater is observed or expected.

       IN - More information is needed to make a determination.

Completed by (signature)  Date 9/17/04  
(print) Hao Zhu  
(title) Environmental Engineer

Supervisor (signature)  Date 9/17/04  
(print) Brad Maulding  
(title) Section Manager  
(EPA Region or State) Utah DEQ

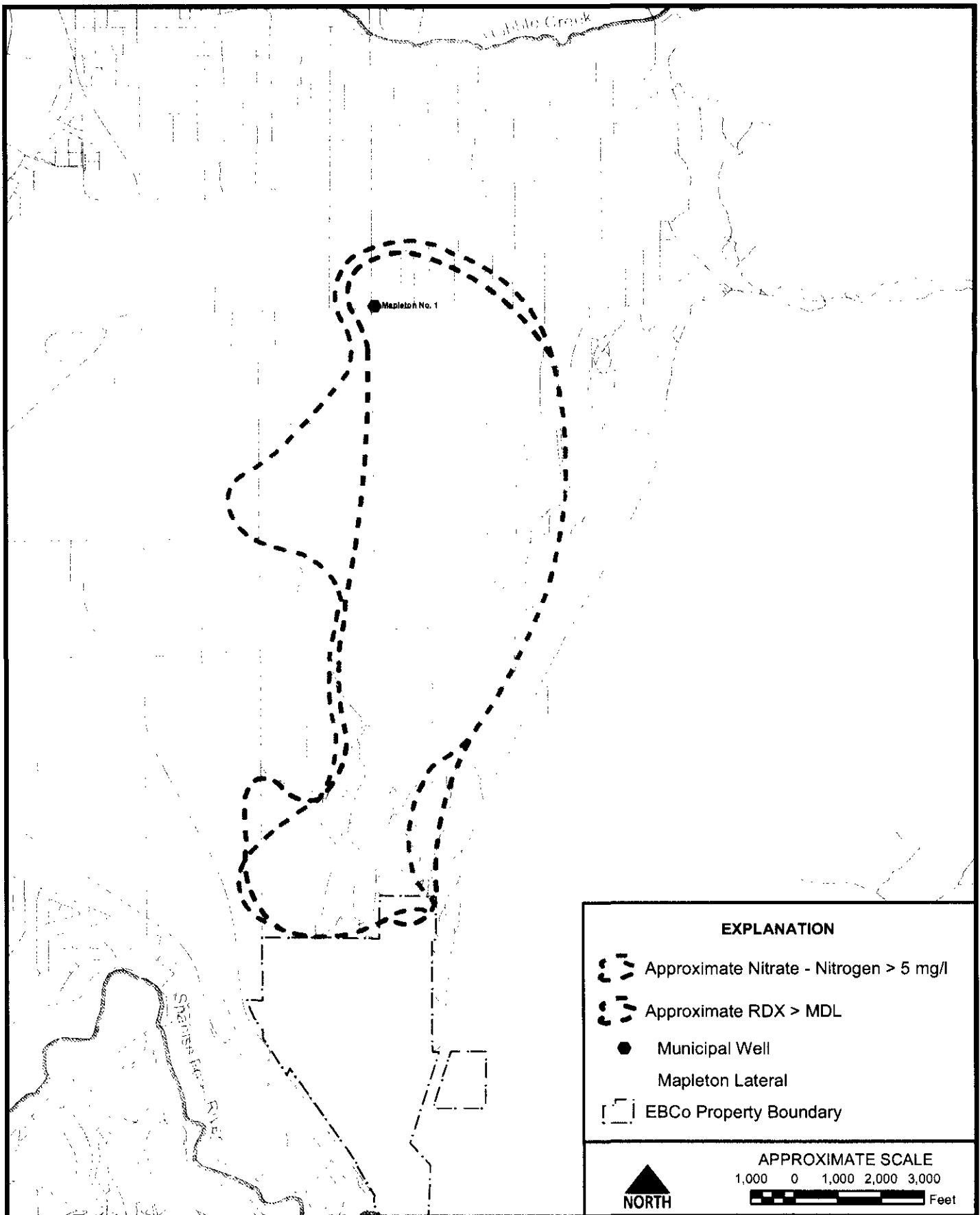
Locations where References may be found:

Off-site groundwater:  
Utah Division of Water Quality  
Cannon Health Building, 3<sup>rd</sup> Floor  
288 North 1460 West  
Salt Lake City, UT 84114-4870

On-site RFI activities:  
Utah Division of Solid and Hazardous Waste  
Cannon Health Building, 4<sup>th</sup> Floor  
288 North 1460 West  
Salt Lake Cit, UT 84114-4880

Contact telephone and e-mail numbers

(name) Hao Zhu (at the DSHW office)  
(phone #) 1-801-538-6170



CHAPTER OAK



4505 South Wasatch Blvd., Ste. 360  
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**NITRATE - NITROGEN AND RDX  
APPROXIMATE DISTRIBUTION MAP  
2003**